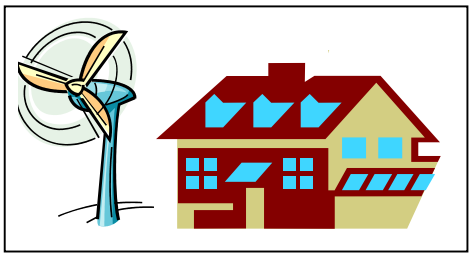
1234 Research Parkway
Technology, MI 98765
"State-of-the-Art Power"

M E M O R A N D U M

TO: *WindDrive* ™ Development Group
FROM: C. Radcliffe, Controls Group Supervisor
DATE: March 15, 2010
SUBJ: Modeling of the *WindDrive* ™ Drivetrain Thermal Control System



1. This week the group will model the *WindDrive* ™ Environmental Control (WEC) system and analyze the system's response to a step input in order to help predict the response times for the system.

2. You will operate the PT 326 Process Trainer and PID150Y Proportional, Integral, Derivative Module to investigate the temperature of flowing fluid. Using these tests to understand the capability and properties of this technology. It is particularly important to observe the effect of a small process delay on feedback controller stability.

3. This laboratory evaluation of the PEC will help you determine its applicability to our new *WindDrive* ™ home power generator. The demonstration is designed to simulate applications to instrumentation case temperature; however, we feel there may be application to temperature control of the primary electric generator as well. The system is governed by a first order differential equation and there are many systems in our new product whose behavior is also 1st order. One example is the speed control system. You will come to quantitative conclusions on the performance and system errors through investigation of this dynamic system and the control strategies as well as sources of error in the modeling and measurement.